rapidly horizontally, but by this method I could only record in each experiment during the time of the movement of the glass plate—about one second. By the gramophone, records of vocal sounds might be taken during a period of three minutes.

An inspection of the curves so obtained of a voice or of an orchestra only makes the performance of a gramophone more wonderful and more difficult to understand. We see a long series of waves of various forms which the eye cannot follow; but when these waves appeal to the ear, then music starts into life. Each sense has its own beat.

JOHN G. MCKENDRICK.

THE POISONS OF THE PHARMACY ACT.

ONE of the minor legislative achievements of last session was an amendment of the Poisons and Pharmacy Acts. So far as poisons are concerned, it may be noted that these Acts restrict the facilities for obtaining certain substances which experience has shown to be often responsible for fatalities, whether by accident or by intentional administration. Besides the commoner violent poisons—the arsenic and strychnine of the wilful poisoner, the prussic acid and carbolic acid of the suicide—there are milder varieties of toxic substances which may lead to fatal results through ignorant or careless usage, and which should therefore not lightly be dealt out to ignorant or careless users. Such, for instance, are the narcotics, as morphine and sulphonal; the emetics, *e.g.* tartar emetic; and the abortifacients, such as ergot and savin.

What is a poison? Precise definition is difficult. Very largely it is a matter of quantity; most medicines are poisonous if taken in excess. Personal idiosyncracy and immunisation are also factors. The proverb "One man's meat is another man's poison" contains at least the half-truth characteristic of proverbs; and the Styrian arsenic-eaters, as Sir Henry Roscoe showed nearly fifty years ago, can easily withstand doses of arsenic which would be fatal to ordinary people.

In the Act before us the legislature defines its poisons by enumerating them. To toxicologists and pharmacists the list is no doubt familiar enough. To other readers, however, it may be of interest to glance at the list of articles now included in the schedule of poisons. These, as explained below, are only to be sold under certain specified conditions.

Part i. of the schedule is concerned generally with the more active poisons, upon the sale of which the more stringent restrictions are naturally placed. The buyer must be known to the seller, or must be introduced to him by a third person known to both; the sale must be recorded in a special book and the entry signed by the purchaser, and the purpose for which the drug is required must be stated.

Arsenic, alkaloids, and the poisonous cyanides form most of this first division. Several of the alkaloids—aconite, aconitine, atropine, belladonna, strychnine, and morphine—are specifically named; but there is also a general category of "all poisonous vegetable alkaloids," which brings in any not otherwise enumerated. Coca, cantharides, corrosive sublimate, tartar emetic, ergot, picrotoxin, and savin complete the list as regards part i.

Part ii. of the schedule contains a list of articles which (1) are to be sold only by registered chemists, and (2) must be labelled as poisons when sold. It includes oil of almonds (unless deprived of prussic acid), antimonial wine, carbolic acid and its homologues, chloral, chloroform, digitalis, the iodide, sulphocyanide, chloride, and oxides of mercury; poppies, strophanthus and sulphonal, together with all preparations which contain a poison within the meaning of the Pharmacy Acts and are not otherwise dealt with.

Most of the foregoing articles are well-known poisons, and the reasons for including them are, perhaps, sufficiently obvious. But a few notes upon the less familiar of them may not be without interest.

One of the most noteworthy is the drug coca. This, the source of the alkaloid cocaine, consists of the dried leaves of *Erythroxylon coca*, a shrub which flourishes on the slopes of the Andes. It has been used as a nerve stimulant by the Peruvian and Bolivian natives from time immemorial. Furnished with a small stock of the leaves to chew, they will work or travel without food from morning until night. As there is no appreciable amount of nourishment in the leaves, the sustaining effect is regarded as probably due to the nerves of the stomach being locally benumbed by the drug, thus preventing the feeling of hunger. Although habitual excessive use of coca brings on insomnia, dropsy, and death, yet a single large dose is said, in the case of the natives, to give a sensation of peculiar physical beatitude. Joyous visions and brilliant phantasmagoria are recorded as the result of a very large dose in one case. On Europeans, however, the action appears to be curiously different from this, fear and terror rather than joy having been noted in numerous cases of coca poisoning.

Cantharides, the Spanish blistering fly, is the dried beetle *Cantharis vesicatoria*. It comes chiefly from Spain, Italy, and Russia. Internally, the drug acts as a powerful irritant, with a peculiar direction to the urinary and genital organs; externally it is used as a blister and rubefacient.

Ergot is the sclerotium of a fungus, *Claviceps purpurea*, arising in the ovary of the rye plant. It is scarcely a poison in the ordinary sense of the word, as most persons—the exceptions being women in pregnancy—can take large doses without fatal effect. Nevertheless, epidemics of poisoning on the Continent have been ascribed to the use of rye-bread contaminated with the fungus. Medicinally it produces contraction of those muscles which act involuntarily, and slows down the action of the heart.

A poison which is said to have been used as a hop-substitute in malt liquors has a place in the schedule. It is picrotoxin, a bitter, crystalline substance obtained from the berries of *Cocculus indicus* (*Anamirta paniculata*). The drug is a potent poison, producing convulsions and violent peristalsis. Savin has been much used in uterine affections. It consists of the dried tops of the shrub *Juniperus sabina*, Lin., a native of southern Europe and the United States. The volatile "oil of savin" obtained from it is a powerful local irritant which has been employed, often with fatal results, in producing criminal abortion. Strophanthus, the seeds of *S. Kombé*, is notable as the source of the Kombé arrow-poison, used in Senegambia, Guinea, and other parts of Africa. For the rest, space allows only a brief mention of sulphonal, which is a soporific drug (dimethyl-methane-diethyl sulphone) synthesised from acetone and mercaptan. Its narcotic action is usually quiet, without disagreeable after-effects; but chronic poisoning and fatal results have frequently accrued from long-continued and injudicious use of the drug.

A large number of deaths by accident and suicide are yearly attributable to poisoning by mineral acids. Restrictions are therefore now placed by the Act upon the sale of hydrochloric, sulphuric and nitric acids, as also of soluble oxalates. These articles must be

labelled as poisonous, and bear the name and address of the seller; but the latter need not be a registered chemist, as in the case of the scheduled poisons.

On the other hand, greater facilities are given for obtaining certain toxic substances used in agriculture and horticulture. In country places there has often been difficulty in obtaining poisonous insecticides, fungicides, and bactericides, as also sheep-dips and weed-killers containing arsenic or nicotine; it has consequently been enacted that these articles may henceforth be sold by any persons duly licensed for the purpose by the local authority. No doubt this provision will be a convenience in rural districts, and will to this extent assist the farmer in dealing with the pests which encumber agriculture.

C. SIMMONDS.

RAINFALL IN ITALY.[1]

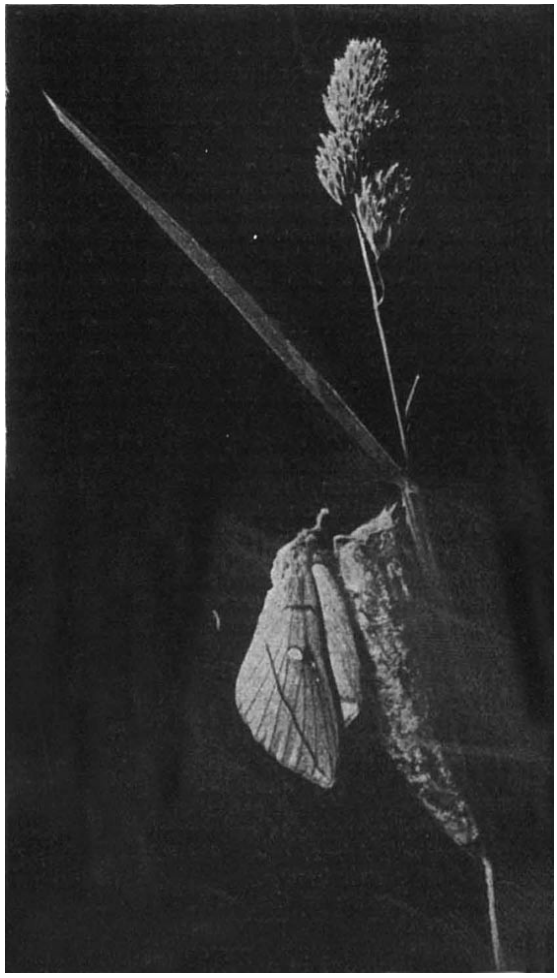
THE Italian Meteorological Department has issued an important work on the rainfall of Italy. The tabular matter contains the total precipitation and the number of rain-days for each month of the twenty-six years 1880 to 1905 for 215 of the 700 rainfall stations in connection with the Italian office. The records are not complete in all cases, but fifteen years is the shortest period dealt with. The largest annual total is 90 inches, at Gemona, near the Austrian frontier, the smallest 18·6 inches, at Foggia. On looking through the tables we are struck by the fact that no attempt seems to be made to secure uniformity of exposure for the gauges. The heights above the ground vary between 60 metres and half a metre. A set of excellent coloured plates shows the average rainfall conditions for each month, each season, and for the whole year.

The seasonal variation of rainfall differs widely in different regions. In the extreme north we have a single very pronounced maximum at midsummer, while in Sicily there is an equally pronounced mid-winter maximum. The one curve is almost exactly the reverse of the other. Over the northern plains and in the northern half of the peninsula there are two maxima, one in May, the other in October or November, the latter being the more pronounced. Over the southern half of the peninsula the winter rains make themselves felt, and we find a principal maximum in October and secondary maxima in January and April. The preparation of the work has been in charge of Dr. Filippo Eredia.

SIMPLE STUDIES IN NATURAL HISTORY.[2]

THE subject of forest trees is such an attractive one and is just now so much to the fore that the little book at the head of our list ought to have a warm reception. It is well illustrated by thirty-two coloured drawings of trees, their leaves, flowers, and fruits, and the text is simply and well written. For children such a work is invaluable, and will enable them to identify trees with great ease. At the present time, when so much ruthless destruction is being effected in country districts by the wholesale felling of young and old timber, it is urgently necessary to emphasise the value of trees. This little book should be especially useful, not only in teaching the different kinds and their uses, but also in nurturing that affection for the noblest of plants which must be more widely entertained if the policy of devastation is to be checked.

Mr. Westell's stories form a complete contrast to this unassuming work on trees. They consist of reprints from publications of the Society for the Prevention of Cruelty to Animals, and contain a series of sketches of animal life that is disjointed, unorganised, and sententious. There are so many good books on this subject suitable for children that it is difficult to see on what grounds this series has been resuscitated. The affection of the author for flies is



Drinker moth (*Oænestis potatoria*) just emerged from Cocoon. From Prof. Ainsworth Davis's "Nature Study."

not a very discriminating one. The pupal stage of the house-fly does not last "some weeks," nor is the blue-bottle fly a desirable acquaintance. The style of the author may be judged from the following reference to the feet of the house-fly:—"The adhesive power of our little feet is not impaired when atmospheric pressure is removed," a sentence that is followed by the naive remark, "I have tried to make (this explanation) as simple as possible, and trust I have succeeded"; or, again, *àpropos* of the lapwing, "Notice the lapping movement carried out, after which we have been accorded one of our English names," a sentence that is as cryptic as it is ungainly.

[1] "Le precipitazioni atmosferiche in Italia dal 1880 al 1905." Annals dell Ufficio Centrale Meteorologico e Geodinamico Italiano, vol. xxv., parte i.

[2] "Trees shown to the Children." By Janet Harvey Kelman, and described by C. E. Smith. Pp. xiv+131; with 32 coloured plates. (Edinburgh and London: T. C. and E. C. Jack.) Price 2s. 6d. net.

"Animals at Home." By W. P. Westell. Pp. 240; 24 plates. (London: Dent and Co., 1908.) Price 3s. 6d.

"Nature Study." By J. R. Ainsworth Davis, M.A. Pp. xii+274. (London: Dent and Co., 1908.) Price 2s. 6d.